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INTELLIGENCE HANDBOOK

Satellite working aid
A WORKING AID ON
SOVIET SURFACE-TO-SURFACE MISSILES



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DIRECTORATE OF INTELLIGENCE

U.S. C.I.A.
Office of Current Intelligence

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GROUP 1
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WARNING

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

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This handbook has been prepared to provide information on Soviet surface-to-surface guided missiles. One series of surface-to-surface unguided rockets, the FROG, is included because of its nuclear warhead capability and its wide use in the USSR and Soviet Bloc ground forces as a tactical weapon.

The performance information given is intended only to provide a general idea of the maximum capabilities of each missile/rocket.

The following abbreviations have been used to identify the missiles/rockets by type:

AS	air-to-surface
FROG	free-rocket-over-ground
SS	surface-to-surface
SS-C	surface-to-surface cruise
SS-N	surface-to-surface naval

Pages of this handbook will be updated periodically as new information becomes available.

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GLOSSARY OF TERMS

AMINE	A class of liquid fuels containing chemical compounds derived from ammonia.
AUTOPILOT GUIDANCE	Guidance system in which the missile is stabilized and kept on course or maneuvered by gyros.
BEAM-RIDER GUIDANCE	Guidance method in which the missile is launched to enter a radar beam pointed at the target and remains in this beam for at least part of the flight.
CEP	Circular error probability (the radius of a circle in which, statistically, one-half of the impacts will occur).
C-STOFF	A non-storable liquid fuel composed of alcohol, hydrazine hydrate, and water.
HOMER	A guidance system component used to control the terminal phase of the flight of a missile. It may incorporate an active or semi-active radar or an infra-red device.
HYDRAZINE	Liquid fuel consisting of hydrogen and nitrogen.
INERTIAL GUIDANCE	Guidance system incorporating a mechanism within the missile which senses changes in velocity and direction and generates guidance commands to keep the missile on a pre-computed course over a predetermined range.
IOC	Initial operational capability (date the first operational unit is trained and equipped with a few missiles and launchers).
IR	Infrared—Used herein to refer to a homer sensitive to infrared radiation from a target.
IRFNA	Inhibited red fuming nitric acid (a storable liquid fuel).
LOX	Liquid oxygen.
RADIO-INERTIAL	Dual guidance system consisting of an inertial system aboard the missile supplemented by radio link from the ground to the missile.
RV	Re-entry vehicle.
TRACK/COMMAND GUIDANCE	Guidance system in which both the missile and the target are tracked by radars. The missile is guided to the target or target area by radio signals.
UDMH	Unsymmetrical dimethyl hydrazine—an amine fuel (a storable liquid fuel).
VERNIER ROCKET	An auxiliary rocket engine, smaller than the main thrust unit, used for precise adjustments in velocity and trajectory of a missile.

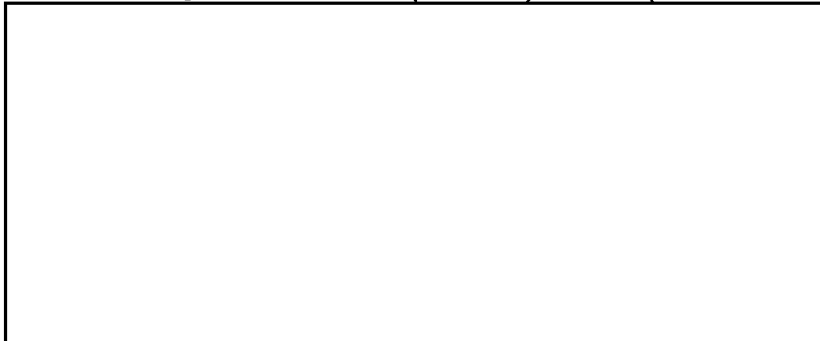
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FROG-1

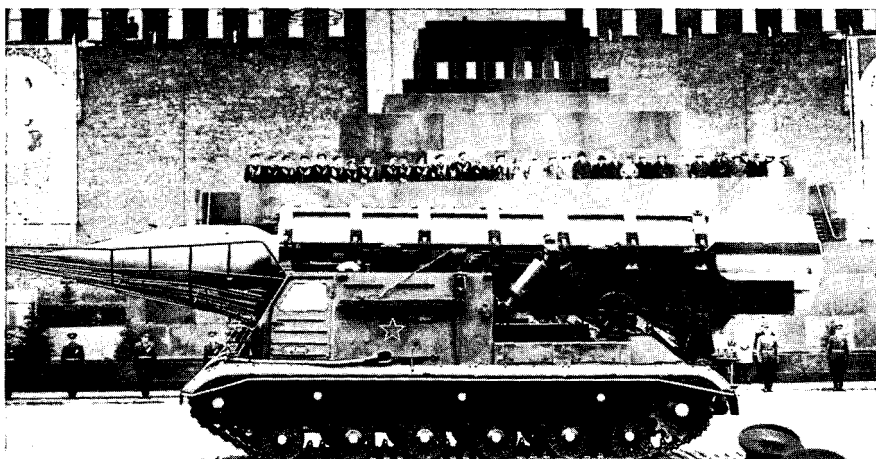
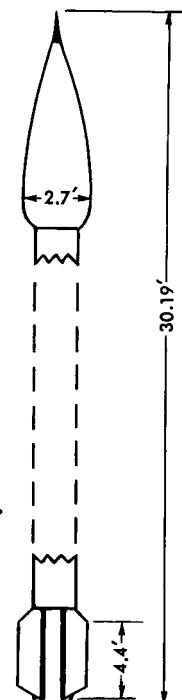
TACTICAL ROCKET

US designation: FROG-1

Soviet designation: 3R2 (nuclear) 3R3 (conventional)



Remarks: First publicly displayed in November 1957 Moscow parade.



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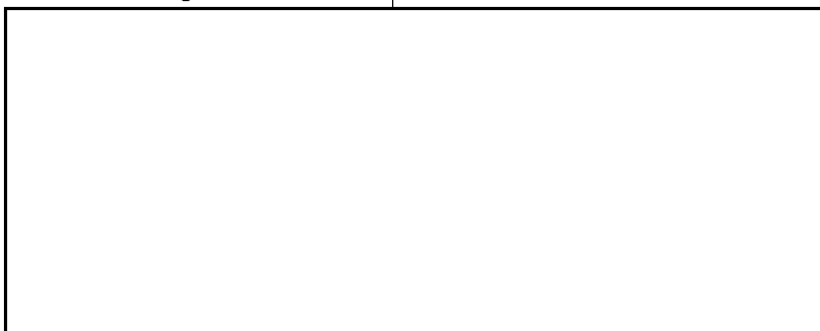
FROG-2

TACTICAL ROCKET

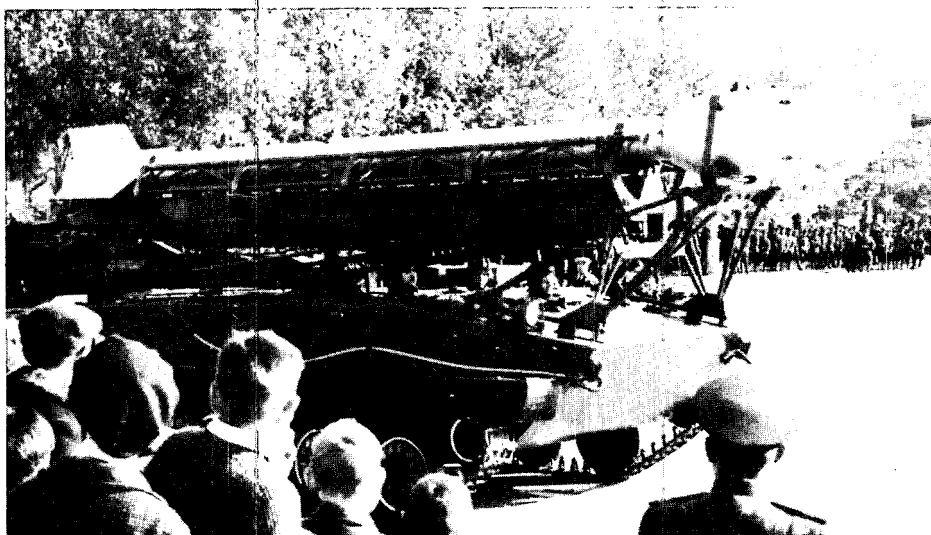
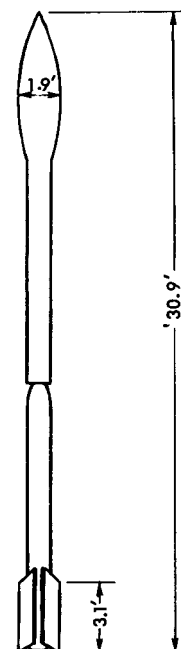
EGIB

US designation: FROG-2

Soviet designation: 3R1



Remarks: First and only sighting in November 1957
Moscow parade.



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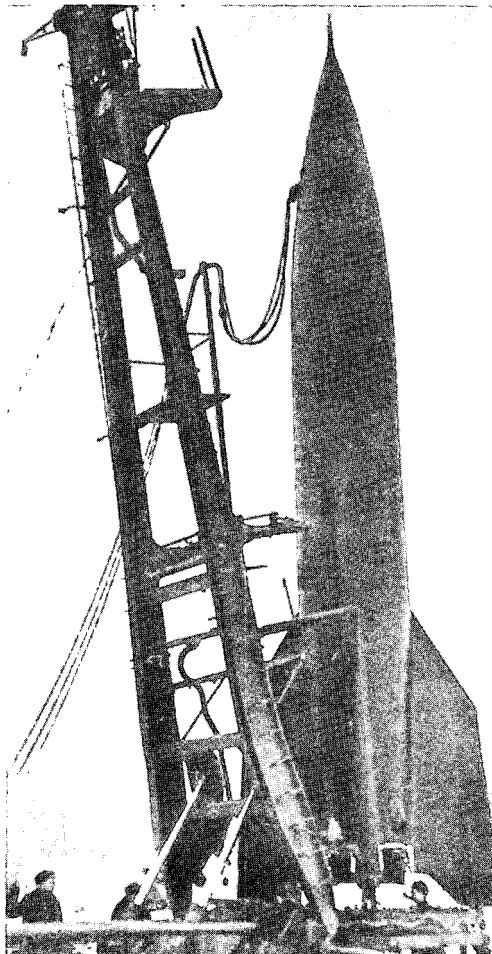
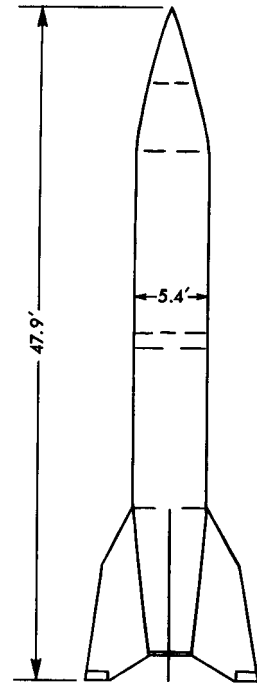
SS-1A/SCUNNER

SHORT RANGE BALLISTIC MISSILE

US designation: SS-1A/SCUNNER
Soviet designation: R-1 (8A 11)
IOC: Prior to 1954. Now obsolete.



Remarks: Soviet version of the German V-2 rocket.



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